

Induced Seismicity State Task Force Meeting



DRAFT STATE ACTION PLAN

Kansas Governor Sam Brownback recently established a task force, led by the Kansas Geological Survey (KGS), and comprised of the Kansas Corporation Commission (KCC), and Kansas Department of Health and Environment (KDHE), with direction to study and develop a State Action Plan for potential induced seismicity.

Recent seismic activity in Oklahoma and south-central Kansas has heightened concerns that human activities might be causing felt earthquakes. Induced seismicity in other states has been linked to reservoirs (lakes), geothermal development, and waste disposal.

While hydraulic fracturing does create micro seismic events (less than a magnitude 1.0 and too small to feel), they are highly localized and not considered significant. Felt earthquake activity (generally greater than a magnitude 2.5) resulting from hydraulic fracturing has been confirmed from only one location in the world,¹ though events in Oklahoma and Ohio may be related to hydraulic fracturing. In the midcontinent, the United States Geological Survey (USGS) has stated there is “no evidence to suggest hydraulic fracturing itself is the cause of the increased rate of earthquakes.”²

There is data that suggests earthquakes can be triggered by fluid injection. USGS research and other studies have found that “at some locations the increase in seismicity coincides with the injection of wastewater in deep disposal wells.”² Fluid injection near a fault under a certain set of conditions can cause a fault to move, resulting in an earthquake.

Significant amounts of salt water are produced along with oil and natural gas in the United States, including in Kansas. This salt water is generally injected back into the deep surface for disposal or as part of enhanced oil recovery (EOR). These injection wells, for regulatory purposes, are referred to as Class II injection wells and are designed and permitted to ensure potential drinking water supplies are not compromised. In Kansas, Class II injection wells are regulated by the KCC. There are more than 16,000 Class II wells in Kansas used to inject waste fluid from oil and gas operations. The majority of Class II wells in Kansas are used for EOR projects and approximately 5,000 serve as disposal wells.

Oil and gas is a cornerstone industry in Kansas generating nearly \$4.3 billion each year, and employs 118,000 Kansans each day. In developing the State Action Plan, the task force considered the safety of all Kansans and the impacts to industry, and the environment.

The working group has met, including with a seismologist from the Oklahoma Geological Survey, and has developed a proposed (draft) State Action Plan for potential induced seismicity modeled on other state plans in response to possible cases of induced seismicity. The plan will also recommend improvement of Kansas’ seismic monitoring capabilities, as well as possible preventive measures that might be taken prior to permitting a disposal well.

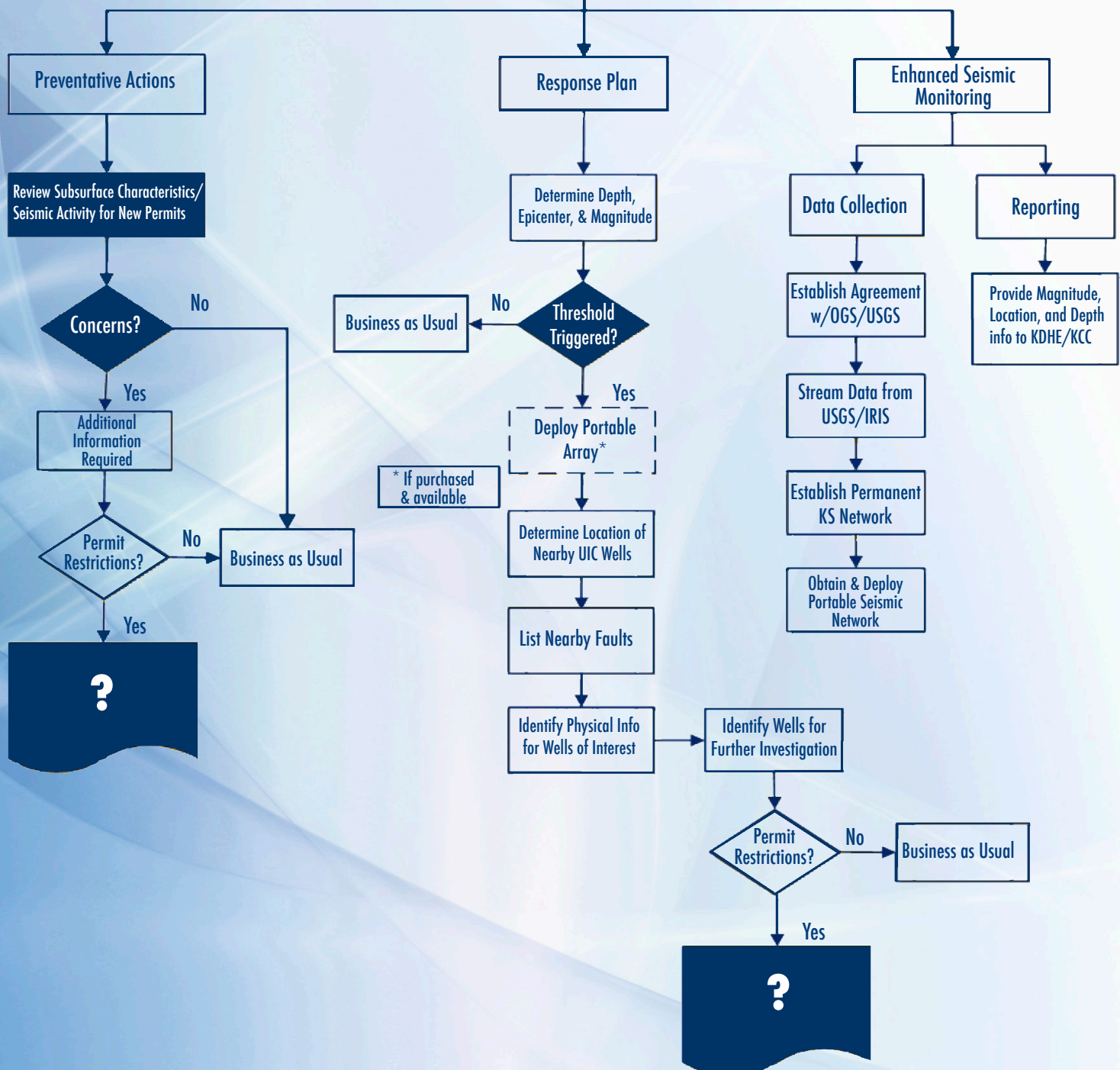
In summary, the plan calls for the KGS to inform the KCC and KDHE of recorded seismic activity. The KCC will identify any Class II wells in a six-mile radius of the seismic activity and assess levels of injection activities. In addition, KDHE will provide input on any injection activities of which it is aware. The KCC can take a number of actions ranging from modifying Class II well permit to shutting down an injection well at any time if there is a possible relationship suggesting causation between the injection activities and significant seismic activities.

¹ National Research Council, 2012, Induced Seismicity Potential in Energy Technologies, National Academy of Sciences, 300 p.

² Hayes, D.J., 2012, “Is the recent increase in felt earthquakes in the central US natural or manmade?”, U.S. Geological Survey, <http://www.doi.gov/news/doinews/Is-the-Recent-Increase-in-Felt-Earthquakes-in-the-Central-US-Natural-or-Manmade.cfm> (accessed 14 January 2013)

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KCC/KGS/KDHE **Draft** State Action Plan for Potential Induced Seismicity



ABC = Fixed Actions

ABC = Stakeholder Input Critical